Earth Systems Consultants
Northern California

47853 Warm Springs Blvd.
Fremont, CA 94539-7400
(510) 353-0320
FAX (510) 353-0344

File No. NFE-4392-01
February 12, 1999

Ms. Larry Seto
Hazardous Materials Specialist
Alameda County
Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502-6577

Re: 2415 Mariner Square Drive
Alameda, CA
Risk Assessment Report

Dear Mr. Seto:

Earth Systems Consultants Northern California (ESCNC) is submitting the attached Risk Assessment Report. An additional copy of the report is included for Ms. Logan.

If any questions arise, or if additional information is desired, please give us a call.

Sincerely,

EARTH SYSTEMS CONSULTANTS
NORTHERN CALIFORNIA

Gary Pischke, C.E.G.
Senior Geologist

Attachments

RESULTS OF SOIL SAMPLES COLLECTED BENEATH PIPELINES NEAR MW-2 AND MW-5

Mariner Square
Alameda, California

JANUARY 1999

For
Mariner Square Associates
Alameda, California

By
Earth Systems Consultants
Northern California
47853 Warm Springs Boulevard
Fremont, California 94539

Earth Systems Consultants
Northern California

47853 Warm Springs Blvd.
Fremont, CA 94539-7400
(510) 353-0320
FAX (510) 353-0344

File No. NFE-4392-01
January 4, 1999

Alameda County Health Care Services Agency
Environmental Protection Division
1131 Harbor Bay Parkway, Room 250
Alameda, CA 94502-6577

Attention: Mr. Larry Seto

Subject: Mariner Square
2415 Mariner Square Drive
Alameda, California
RESULTS OF SOIL SAMPLES COLLECTED BENEATH PIPELINES NEAR MW-2 AND MW-5

Dear Mr. Seto:

Earth Systems Consultants Northern California (ESCNC) is submitting this report describing the methods and results for the pipeline removal and associated soil sampling at the subject site (Figure 1). This scope of work was directed by the Alameda County Health Care Services Agency (ACHCSA) in a letter dated November 10, 1997.

Field Activities

On November 21, 1998, ESCNC personnel supervised the removal of two pipelines near MW-5 and MW-2 by Zaccor Companies, Inc. (Figure 2). The pipelines were designated as PL1, the western line, and PL2, the eastern line. PL1 and PL2 were steel pipes 6-inches and 8-inches in diameter, respectively, and both began at the southernmost end of PL1 adjacent to the office building. PL1 ran perpendicular to the office building, then angled toward the east until it converged with PL2 and terminated approximately 15 feet from the concrete sheetpile wall. PL2 ran along the office building approximately 20 feet, then perpendicular to the building until it angled toward the east, converged with PL1, and terminated. All of pipeline PL1 and approximately half of pipeline PL2 were removed. The portions of PL2 along the building and approximately 60 feet perpendicular to the building could not be removed because the overlying concrete was not cut correctly and the pipeline was not accessible.

The pipeline was delivered to LMC in Richmond as scrap metal. Soils beneath the former pipelines consisted of silty sand and sand with slight to moderate hydrocarbon odors. Organic Vapor Analyzer (OVA) readings in the soil ranged from 0 to 150 parts per million (ppm). No groundwater was encountered in either pipeline excavation. Soils removed during the pipeline excavation were stockpiled in the southwestern corner of the property.

Sample Results

ESCNC personnel collected twelve (12) soil samples beneath the former pipelines at 20 foot intervals at the locations shown on Figure 3. Samples were collected from depths ranging from 1.8 to 2.3 feet. The samples were submitted to Entech Analytical Labs, Inc. (ELAP #2224) under

chain of custody protocol. Soil samples were analyzed for total petroleum hydrocarbons as gasoline, diesel, and motor oil (TPHg, TPHd, and TPHmo, respectively) using modified EPA method 8015; benzene, toluene, ethylbenzene, total xylenes (BTEX), and methl tert butyl ether (MTBE) using EPA method 8020; and total threshold limit concentration (TTLC) lead using EPA methods 3050/6010. Sample duplicates were submitted to Acculabs Inc. (ELAP #2330) under chain of custody protocol and analyzed for polynuclear aromatic compounds (PNAs) using EPA method 8270C.

Concentrations of TPHmo ranged from less than 1.0 to 1,600 parts per million (ppm); TPHd ranged from less than 1.0 to 1,000 ppm; and TPHg ranged from less than 1.0 to 1,100 ppm. However, notes on the laboratory reports indicate the majority of the detectable TPHd and TPHg results were not typical of diesel and gasoline, respectively. Benzene and MTBE were not detected in any samples. Toluene, ethylbenzene, and total xylenes were generally below detection limits or detected at low concentrations. Total lead concentrations ranged from less than 5.0 to 150 ppm. Various PNAs were detected in all soil samples, except PL1-1, PL1-5, and PL2-4. The analytical results are summarized in Tables 1 and 2, and the laboratory reports are included in Appendix A.

Discussion

The highest concentrations of TPHmo, TPHd, and TPHg were generally found beneath the southern portions of the former pipelines. There was no apparent trend for the highest concentrations of total lead and PNAs. The soil beneath the pipelines was found to have concentrations of TPH below the 2,000 ppm level and total lead below the 400 ppm level set by the ACHCSA. Based upon the soil sample results, no further excavation appears necessary.

Since part of pipeline PL2 was not excavated, ESCNC recommends removing the remainder of PL2, collecting and analyzing soil samples from beneath the pipeline for the same constituents analyzed during this investigation, and submitting a final pipeline removal report to the ACHCSA. Please call if you have any questions regarding the results of this investigation.

Very truly yours,

EARTH SYSTEMS CONSULTANTS
Northern California

Jeanne Buckthal
Staff Geologist

Gary Pischke
Senior Geologist
CEG 1501

JB/GP:ah Ltr#9

cc: Mr. John Beery, Mariner Square Associates
Mr. Mike Grant, Union Pacific Lines
Mr. Glen Anderson, Texaco, Inc.
Mr. Jeff Smith, Phillips Petroleum Co.

TABLE 1
SOIL ANALYTICAL RESULTS
Mariner Square, Alameda, California
(in parts per million)

	TPHmo	TPHd	TPHg	B	T	E	X	MTBE	Total Lead
PL1-1	1,600	590*	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	140
PL1-2	920	470*	1,100*	<1.0	<1.0	<1.0	1.7	<10	130
PL1-3	28	30*	25	<0.05	0.065	0.087	0.17	<10	37
PL1-4	24	15*	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	150
PL1-5	<1.0	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	<5.0
PL1-6	200	110*	23	<0.05	0.07	0.077	0.85	<0.5	33
PL1-7	89	59*	130*	<0.5	<0.5	2.8	2	<5.0	63
PL2-1	81	210*	<100	<0.5	0.54	1.1	<0.5	<5.0	120
PL2-2	46	28*	8.3*	<0.005	<0.005	<0.005	<0.005	<0.05	28
PL2-3	73	<1.0	<1.0	<0.005	<0.005	<0.005	0.0061	<0.05	150
PL2-4	130	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.05	58
PL2-5	1,400	1,000*	150*	<0.005	<0.005	<0.005	<0.005	<0.05	140

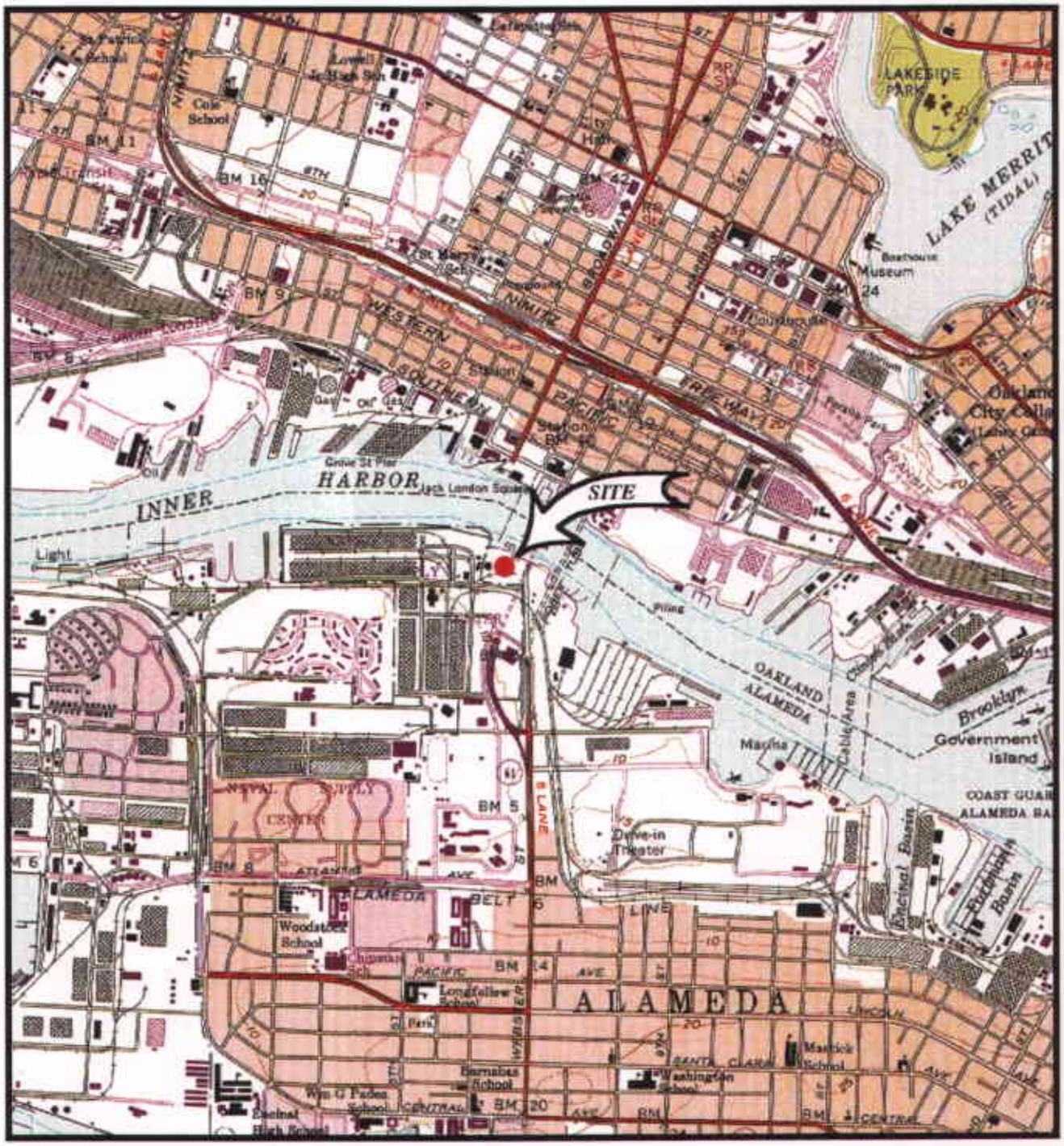
NOTES:
Samples were collected on November 21, 1998.
TPHmo Total Petroleum Hydrocarbons as motor oil
TPHd Total Petroleum Hydrocarbons as diesel
TPHg Total Petroleum Hydrocarbons as gasoline
BTEX Benzene, Toluene, Ethylbenzene, total Xylenes
MTBE Methyl Tert Butyl Ether
< Less than indicated detection limit
* Results within quantitation range; chromatographic pattern not typical of fuel type

TABLE 2
SOIL ANALYTICAL RESULTS - PNAs
Mariner Square, Alameda, California
November 21, 1998
(in parts per million)

	Napthalene	2-Methylnaphalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluroanthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
PL1-1	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4	<3.4
PL1-2	**230**	**260**	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34	<34
PL1-3	**0.99**	**2.6**	<0.67	**0.86**	**1.2**	**2.9**	**0.83**	**1.2**	**0.9**	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
PL1-4	<0.67	<0.67	<0.67	<0.67	<0.67	**1.3**	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
PL1-5	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
PL1-6	**1.7**	**1.2**	<0.67	<0.67	<0.67	**1.9**	<0.67	**1.0**	**1.1**	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
PL1-7	**9.0**	<3.4	<3.4	<3.4	**4.3**	**24**	**8.6**	**19**	**14**	**5.8**	**4.3**	**3.7**	<3.4	<3.4	<3.4	<3.4	<3.4
PL2-1	**5.3**	**3.5**	<0.67	**4.3**	**5.2**	**9.2**	**2.0**	**3.5**	**2.6**	**0.92**	**0.76**	**1.1**	<0.67	**0.82**	<0.67	<0.67	<0.67
PL2-2	**2.2**	**0.81**	<0.67	**0.86**	**1.3**	**3.6**	**0.91**	**1.2**	**1.1**	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
PL2-3	<0.67	<0.67	<0.67	<0.67	<0.67	**1.2**	<0.67	**1.4**	**1.2**	<0.67	**0.70**	**1.26**	<0.67	**0.73**	<0.67	<0.67	<0.67
PL2-4	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67
PL2-5	**1.2**	<0.67	<0.67	<0.67	<0.67	**1.8**	<0.67	**0.8**	**1.5**	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67	<0.67

PNAs Polynuclear Aromatic compounds
< Less than indicated detection limit

File No. NFE-4392-01
December 1998



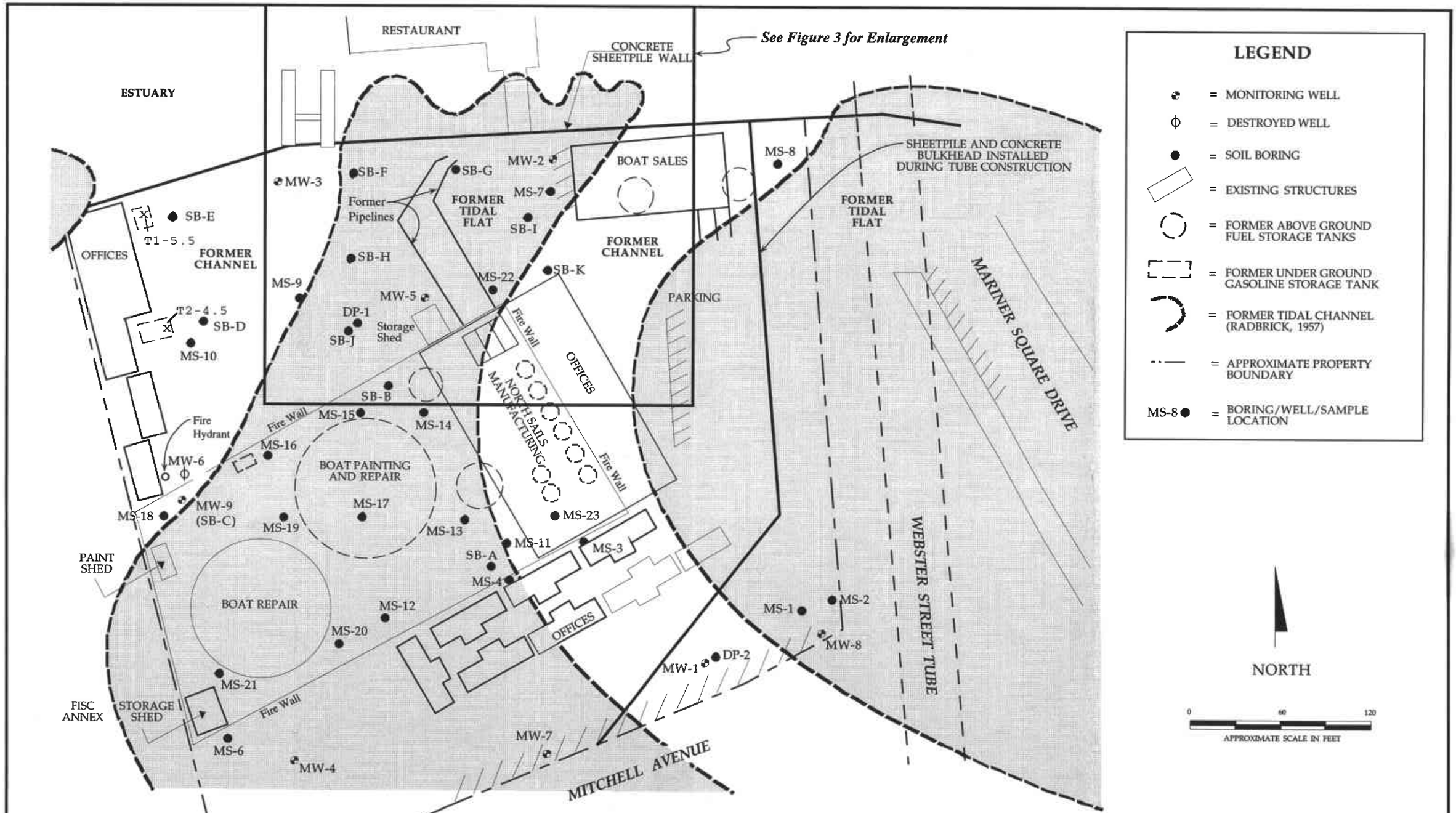
Approximate Scale 1: 24,000

1 0 1 Mile

1 0 1 Kilometer

Base: U S G S 7.5 minute Oakland West Quadrangle (1980)
Printed from TOPO!™ ©1997 Wildflower Productions (415) 558-8700, www.topo.com

Earth Systems Consultants NorthernCalifornia	Mariner Square 2415 Mariner Square Drive Alameda, California	**SITE LOCATION** **Figure 1**



Note: Adapted from Site Plans from McLaren Hart

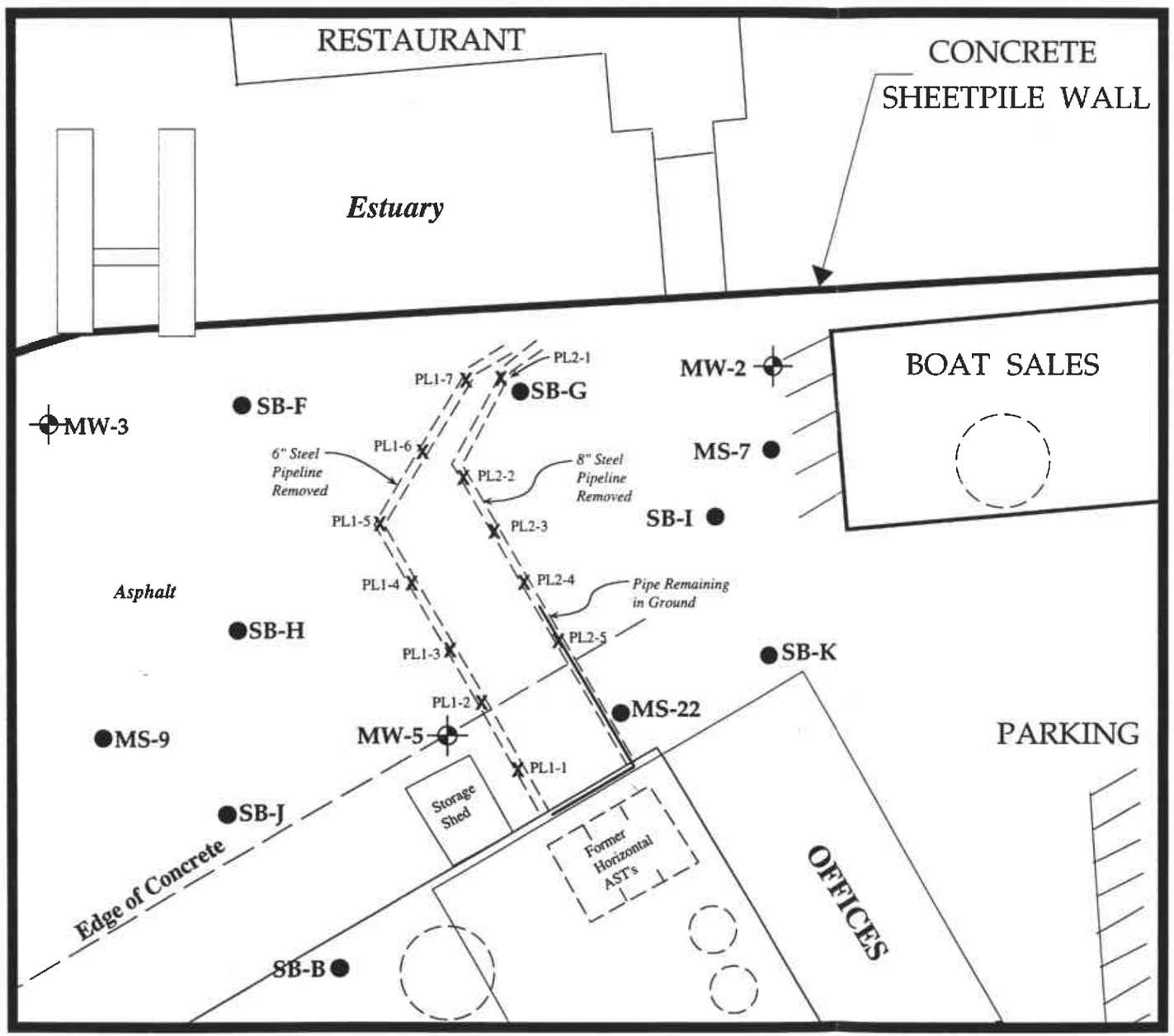
Earth Systems Consultants
Northern California

Mariner Square
2415 Mariner Square Drive
Alameda, California

SITE PLAN

Date: December 1998
File No: NFE-4392-01

Figure 2



LEGEND

= MONITORING WELL

= SOIL BORING

= EXISTING STRUCTURES

= FORMER ABOVE GROUND FUEL STORAGE TANKS

MS-8 = BORING/WELL/SAMPLE LOCATION

PL2-5X = PIPELINE SAMPLE (12/98)

NORTH

0 60 120

APPROXIMATE SCALE IN FEET

Earth Systems Consultants
Northern California

Mariner Square
2415 Mariner Square Drive
Alameda, California

PIPELINE SAMPLE LOCATIONS

Date: December 1998
File No: NFE-4392-01

Figure 3

APPENDIX A

Laboratory Reports and Chain of Custody Documentation

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400
Attn: Gary Pischke

Date: 12/3/98
Date Received: 11/23/98
Project: NFE-4392-01
PO #:
Sampled By: Client

Certified Analytical Report

Soil Sample Analysis: (All results in mg/kg)

Sample ID	PL1-1			PL1-2			PL1-3				
Sample Date	11/21/98			11/21/98			11/21/98				
Sample Time	14:48			14:53			14:58				
Lab #	E21135			E21136			E21137				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Extraction	TTLC			TTLC			TTLC				3050
Analysis Date	11/30/98			11/30/98			11/30/98				
Lead	**140**	1.0	5.0	**130**	1.0	5.0	**37**	1.0	5.0	5.0	6010
Analysis Date	11/24/98			11/24/98			11/24/98				
TPH-Diesel	**590** [x]	10	10	**470** [x]	10	10	**30** [x]	1.0	1.0	1.0	8015M
TPH-Motor Oil	**1,600**	10	10	**920**	10	10	**28**	1.0	1.0	1.0	8015M
Analysis Date	11/25/98			11/25/98			11/30/98				
TPH-Gas	**ND**	1.0	1.0	**1,100** [x]	200	200	**25**	10	10	1.0	8015M
MTBE	**ND**	1.0	0.05	**ND**	200	10	**ND**	10	0.5	0.05	8020
Benzene	**ND**	1.0	0.005	**ND**	200	1.0	**ND**	10	0.05	0.005	8020
Toluene	**ND**	1.0	0.005	**ND**	200	1.0	**0.065**	10	0.05	0.005	8020
Ethyl Benzene	**ND**	1.0	0.005	**ND**	200	1.0	**0.087**	10	0.05	0.005	8020
Xylenes	**ND**	1.0	0.005	**1.7**	200	1.0	**0.17**	10	0.05	0.005	8020

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2224)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400
Attn: Gary Pischke

Date: 12/3/98
Date Received: 11/23/98
Project: NFE-4392-01
PO #:
Sampled By: Client

Certified Analytical Report

Soil Sample Analysis: (All results in mg/kg)

Sample ID	PL1-4			PL1-5			PL1-6				
Sample Date	11/21/98			11/21/98			11/21/98				
Sample Time	15:03			15:09			15:28				
Lab #	E21138			E21139			E21140				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Extraction	TTLC			TTLC			TTLC				3050
Analysis Date	11/30/98			11/30/98			11/30/98				
Lead	**150**	1.0	5.0	**ND**	1.0	5.0	**33**	1.0	5.0	5.0	6010
Analysis Date	11/24/98			11/29/98			11/29/98				
TPH-Diesel	**15** [x]	1.0	1.0	**ND**	1.0	1.0	**110** [x]	2.0	2.0	1.0	8015M
TPH-Motor Oil	**24**	1.0	1.0	**ND**	1.0	1.0	**200**	2.0	2.0	1.0	8015M
Analysis Date	11/25/98			11/25/98			11/30/98				
TPH-Gas	**ND**	1.0	1.0	**ND**	1.0	1.0	**23**	10	10	1.0	8015M
MTBE	**ND**	1.0	0.05	**ND**	1.0	0.05	**ND**	10	0.5	0.05	8020
Benzene	**ND**	1.0	0.005	**ND**	1.0	0.005	**ND**	10	0.05	0.005	8020
Toluene	**ND**	1.0	0.005	**ND**	1.0	0.005	**0.070**	10	0.05	0.005	8020
Ethyl Benzene	**ND**	1.0	0.005	**ND**	1.0	0.005	**0.077**	10	0.05	0.005	8020
Xylenes	**ND**	1.0	0.005	**ND**	1.0	0.005	**0.85**	10	0.05	0.005	8020

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2224)

Michelle L. Anderson, Lab Director

Entech Analytical Labs, Inc.

CA ELAP# 2224

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Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400
Attn: Gary Pischke

Date: 12/3/98
Date Received: 11/23/98
Project: NFE-4392-01
PO #:
Sampled By: Client

Certified Analytical Report

Soil Sample Analysis: (All results in mg/kg)

Sample ID	PL1-7			PL2-1			PL2-2				
Sample Date	11/21/98			11/21/98			11/21/98				
Sample Time	15:39			15:35			16:16				
Lab #	E21141			E21142			E21143				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Extraction	TTLC			TTLC			TTLC				3050
Analysis Date	11/30/98			11/30/98			11/30/98				
Lead	**63**	1.0	5.0	**120**	1.0	5.0	**28**	1.0	5.0	5.0	6010
Analysis Date	11/29/98			11/29/98			11/29/98				
TPH-Diesel	**59** [x]	1.0	1.0	**210** [x]	1.0	1.0	**28** [x]	1.0	1.0	1.0	8015M
TPH-Motor Oil	**89**	1.0	1.0	**81**	1.0	1.0	**46**	1.0	1.0	1.0	8015M
Analysis Date	12/1/98			12/1/98			12/3/98				
TPH-Gas	**130** [x]	100	100	**ND**	100	100	**8.3** [x]	5.0	5.0	1.0	8015M
MTBE	**ND**	100	5.0	**ND**	100	5.0	**ND**	5.0	0.25	0.05	8020
Benzene	**ND**	100	0.5	**ND**	100	0.5	**ND**	5.0	0.025	0.005	8020
Toluene	**ND**	100	0.5	**0.54**	100	0.5	**ND**	5.0	0.025	0.005	8020
Ethyl Benzene	**2.8**	100	0.5	**1.1**	100	0.5	**ND**	5.0	0.025	0.005	8020
Xylenes	**2.0**	100	0.5	**ND**	100	0.5	**ND**	5.0	0.025	0.005	8020

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2224)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 2224

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Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400
Attn: Gary Pischke

Date: 11/3/98
Date Received: 11/23/98
Project: NFE-4392-01
PO #:
Sampled By: Client

Certified Analytical Report

Soil Sample Analysis: (All results in mg/kg)

Sample ID	PL2-3			PL2-4			PL2-5				
Sample Date	11/21/98			11/21/98			11/21/98				
Sample Time	16:25			16:30			16:36				
Lab #	E21144			E21145			E21146				
	Result	DF	DLR	Result	DF	DLR	Result	DF	DLR	PQL	Method
Extraction	TTLC			TTLC			TTLC				3050
Analysis Date	11/30/98			11/30/98			11/30/98				
Lead	**150**	1.0	5.0	**58**	1.0	5.0	**140**	1.0	5.0	5.0	6010
Analysis Date	11/29/98			11/29/98			11/29/98				
TPH-Diesel	**ND**	1.0	1.0	**ND**	1.0	1.0	**1,000** [x]	10	10	1.0	8015M
TPH-Motor Oil	**73**	1.0	1.0	**130**	1.0	1.0	**1,400**	10	10	1.0	8015M
Analysis Date	12/1/98			12/1/98			12/1/98				
TPH-Gas	**ND**	1.0	1.0	**ND**	1.0	1.0	**150** [x]	100	100	1.0	8015M
MTBE	**ND**	1.0	0.05	**ND**	1.0	0.05	**ND**	100	5.0	0.05	8020
Benzene	**ND**	1.0	0.005	**ND**	1.0	0.005	**ND**	100	0.5	0.005	8020
Toluene	**ND**	1.0	0.005	**ND**	1.0	0.005	**ND**	100	0.5	0.005	8020
Ethyl Benzene	**ND**	1.0	0.005	**ND**	1.0	0.005	**ND**	100	0.5	0.005	8020
Xylenes	**0.0061**	1.0	0.005	**ND**	1.0	0.005	**ND**	100	0.5	0.005	8020

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2224)

Michelle L. Anderson, Lab Director

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

STANDARD LAB QUALIFIERS
July, 1998

All Entech lab reports now reference standard lab qualifiers. These qualifiers are noted in the adjacent column to the analytical result and are adapted from the U.S. EPA CLP program. The current qualifier list is as follows:

Qualifier	Description
U	Compound was analyzed for but not detected
J	Estimated valued for tentatively identified compounds or if result is below PQL but above MDL
N	Presumptive evidence of a compound (for Tentatively Identified Compounds)
B	Analyte is found in the associated Method Blank
E	Compounds whose concentrations exceed the upper level of the calibration range
D	Multiple dilutions reported for analysis; discrepancies between analytes may be due to dilution
X	Results within quantitation range; chromatographic pattern not typical of fuel

Entech Analytical Labs, Inc.

CA ELAP# 2224

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

December 1, 1998

Gary Pischke
Earth Systems Consultants
47853 Warm Springs Blvd.
Fremont, CA 94539-7400

Subject:	12 Soil Samples
Lab #'s:	E21135-E21146
Project Name:	
Project Number:	NFE-4392-01
P.O. Number:	
Method(s):	EPA 8270-PNAs
Subcontract lab:	Acculabs, Inc.

Dear Gary Pischke,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2224). If you have any questions regarding procedures or results, please call me at 408-735-1550.

Sincerely,

Michelle L. Anderson
Lab Director

Acculabs Inc.

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

Sample Log 19312
December 02, 1998

Michelle Anderson
Entech Analytical Labs, Inc.
525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

Subject : 12 Soil Samples
Project Name : Earth Systems Consultants
Project Number :

Dear Ms. Anderson,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of Arizona (AZ0583) and the State of California (# I-2330). If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

Tom Kwoka

Acculabs Inc.

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

Subject : 12 Soil Samples
Project Name : Earth Systems Consultants
Project Number :

Sample Log 19312
December 02, 1998

Case Narrative

Sample Name: E21135 (PL1-1)

This sample was reported as a 1:5 dilution due to matrix interferences in the undiluted sample extract.

Sample Name: E21136 (PL1-2)

The 2-Fluorobiphenyl surrogate was below the recovery limit of 30%. This can be attributed to dilution.

Tom Kwoka

Acculabs Inc.

Davis

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PNAs by 8270C

Sample Log 19312
December 01, 1998

Sample Name : **E21135 (PL1-1)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 11/30/98
Date Received : 11/24/98
Dilution : 1:5
Sample Matrix : Soil
Lab Number : 19312-01

Parameter	MRL	Measured Conc.	Units
Naphthalene	3.4	<3.4	mg/Kg
2-Methylnaphthalene	3.4	<3.4	mg/Kg
Acenaphthylene	3.4	<3.4	mg/Kg
Acenaphthene	3.4	<3.4	mg/Kg
Fluorene	3.4	<3.4	mg/Kg
Phenanthrene	3.4	<3.4	mg/Kg
Anthracene	3.4	<3.4	mg/Kg
Fluoranthene	3.4	<3.4	mg/Kg
Pyrene	3.4	<3.4	mg/Kg
Benzo(a)anthracene	3.4	<3.4	mg/Kg
Chrysene	3.4	<3.4	mg/Kg
Benzo(b)fluoranthene	3.4	<3.4	mg/Kg
Benzo(k)fluoranthene	3.4	<3.4	mg/Kg
Benzo(a)pyrene	3.4	<3.4	mg/Kg
Indeno(1,2,3-c,d)pyrene	3.4	<3.4	mg/Kg
Dibenz(a,h)anthracene	3.4	<3.4	mg/Kg
Benzo(g,h,i)perylene	3.4	<3.4	mg/Kg
2-Fluorophenol		76	% Recovery
Phenol-d5		91	% Recovery
Nitrobenzene-d5		88	% Recovery
2-Fluorobiphenyl		94	% Recovery
2,4,6-Tribromophenol		82	% Recovery
Terphenyl-d14		95	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwiatka

Acculabs Inc.

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PNAs by 8270C

Sample Log 19312
December 02, 1998

Sample Name : **E21136 (PL1-2)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 12/01/98
Date Received : 11/24/98
Dilution : 1:50
Sample Matrix : Soil
Lab Number : 19312-02

Parameter	MRL	Measured Conc.	Units
Naphthalene	**34**	**230**	mg/Kg
2-Methylnaphthalene	**34**	**260**	mg/Kg
Acenaphthylene	34	<34	mg/Kg
Acenaphthene	34	<34	mg/Kg
Fluorene	34	<34	mg/Kg
Phenanthrene	34	<34	mg/Kg
Anthracene	34	<34	mg/Kg
Fluoranthene	34	<34	mg/Kg
Pyrene	34	<34	mg/Kg
Benzo(a)anthracene	34	<34	mg/Kg
Chrysene	34	<34	mg/Kg
Benzo(b)fluoranthene	34	<34	mg/Kg
Benzo(k)fluoranthene	34	<34	mg/Kg
Benzo(a)pyrene	34	<34	mg/Kg
Indeno(1,2,3-c,d)pyrene	34	<34	mg/Kg
Dibenz(a,h)anthracene	34	<34	mg/Kg
Benzo(g,h,i)perylene	34	<34	mg/Kg
2-Fluorophenol		27	% Recovery
Phenol-d5		36	% Recovery
Nitrobenzene-d5		46	% Recovery
2-Fluorobiphenyl		27	% Recovery
2,4,6-Tribromophenol		27	% Recovery
Terphenyl-d14		32	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : T.K.
Tom Kwoka

Acculabs Inc.

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PNAs by 8270C

Sample Log 19312
December 01, 1998

Sample Name : **E21137 (PL1-3)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 11/30/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-03

Parameter	MRL	Measured Conc.	Units
Naphthalene	**0.67**	**0.99**	mg/Kg
2-Methylnaphthalene	**0.67**	**2.6**	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	**0.67**	**0.86**	mg/Kg
Fluorene	**0.67**	**1.2**	mg/Kg
Phenanthrene	**0.67**	**2.9**	mg/Kg
Anthracene	**0.67**	**0.83**	mg/Kg
Fluoranthene	**0.67**	**1.2**	mg/Kg
Pyrene	**0.67**	**0.9**	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		60	% Recovery
Phenol-d5		73	% Recovery
Nitrobenzene-d5		80	% Recovery
2-Fluorobiphenyl		84	% Recovery
2,4,6-Tribromophenol		78	% Recovery
Terphenyl-d14		84	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

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PNAs by 8270C

Sample Log 19312
December 01, 1998

Sample Name : **E21138 (PL1-4)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 11/30/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-04

Parameter	MRL	Measured Conc.	Units
Naphthalene	0.67	<0.67	mg/Kg
2-Methylnaphthalene	0.67	<0.67	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
Phenanthrene	**0.67**	**1.3**	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Fluoranthene	0.67	<0.67	mg/Kg
Pyrene	0.67	<0.67	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		77	% Recovery
Phenol-d5		82	% Recovery
Nitrobenzene-d5		85	% Recovery
2-Fluorobiphenyl		86	% Recovery
2,4,6-Tribromophenol		78	% Recovery
Terphenyl-d14		81	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

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PNAs by 8270C

Sample Log 19312
December 02, 1998

Sample Name : **E21139 (PL1-5)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 12/01/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-05

Parameter	MRL	Measured Conc.	Units
Naphthalene	0.67	<0.67	mg/Kg
2-Methylnaphthalene	0.67	<0.67	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
Phenanthrene	0.67	<0.67	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Fluoranthene	0.67	<0.67	mg/Kg
Pyrene	0.67	<0.67	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		72	% Recovery
Phenol-d5		75	% Recovery
Nitrobenzene-d5		84	% Recovery
2-Fluorobiphenyl		81	% Recovery
2,4,6-Tribromophenol		77	% Recovery
Terphenyl-d14		76	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

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PNAs by 8270C

Sample Log 19312
December 02, 1998

Sample Name : **E21140 (PL1-6)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 12/01/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-06

Parameter	MRL	Measured Conc.	Units
Naphthalene	**0.67**	**1.7**	mg/Kg
2-Methylnaphthalene	**0.67**	**1.2**	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
Phenanthrene	**0.67**	**1.9**	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Fluoranthene	**0.67**	**1.0**	mg/Kg
Pyrene	**0.67**	**1.1**	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		74	% Recovery
Phenol-d5		76	% Recovery
Nitrobenzene-d5		87	% Recovery
2-Fluorobiphenyl		86	% Recovery
2,4,6-Tribromophenol		82	% Recovery
Terphenyl-d14		81	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

Davis

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PNAs by 8270C

Sample Log 19312
December 02, 1998

Sample Name : **E21141 (PL1-7)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 12/01/98
Date Received : 11/24/98
Dilution : 1:5
Sample Matrix : Soil
Lab Number : 19312-07

Parameter	MRL	Measured Conc.	Units
Naphthalene	**3.4**	**9.0**	mg/Kg
2-Methylnaphthalene	3.4	<3.4	mg/Kg
Acenaphthylene	3.4	<3.4	mg/Kg
Acenaphthene	3.4	<3.4	mg/Kg
Fluorene	**3.4**	**4.3**	mg/Kg
Phenanthrene	**3.4**	**24**	mg/Kg
Anthracene	**3.4**	**8.6**	mg/Kg
Fluoranthene	**3.4**	**19**	mg/Kg
Pyrene	**3.4**	**14**	mg/Kg
Benzo(a)anthracene	**3.4**	**5.8**	mg/Kg
Chrysene	**3.4**	**4.3**	mg/Kg
Benzo(b)fluoranthene	**3.4**	**3.7**	mg/Kg
Benzo(k)fluoranthene	3.4	<3.4	mg/Kg
Benzo(a)pyrene	3.4	<3.4	mg/Kg
Indeno(1,2,3-c,d)pyrene	3.4	<3.4	mg/Kg
Dibenz(a,h)anthracene	3.4	<3.4	mg/Kg
Benzo(g,h,i)perylene	3.4	<3.4	mg/Kg
2-Fluorophenol		99	% Recovery
Phenol-d5		107	% Recovery
Nitrobenzene-d5		107	% Recovery
2-Fluorobiphenyl		115	% Recovery
2,4,6-Tribromophenol		118	% Recovery
Terphenyl-d14		119	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

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Sample Log 19312
December 02, 1998

PNAs by 8270C

Sample Name : **E21142 (PL2-1)**

Project Name	: Earth Systems Consultants	Date Analyzed	: 12/02/98
Project Number	:	Date Received	: 11/24/98
Sample Date	: 11/21/98	Dilution	: 1:1
Date Extracted	: 11/30/98	Sample Matrix	: Soil
Extr. Method	: EPA 3550	Lab Number	: 19312-08
QC Batch	: BS981105		

Parameter	MRL	Measured Conc.	Units
Naphthalene	**0.67**	**5.3**	mg/Kg
2-Methylnaphthalene	**0.67**	**3.5**	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	**0.67**	**4.3**	mg/Kg
Fluorene	**0.67**	**5.2**	mg/Kg
Phenanthrene	**0.67**	**9.2**	mg/Kg
Anthracene	**0.67**	**2.0**	mg/Kg
Fluoranthene	**0.67**	**3.5**	mg/Kg
Pyrene	**0.67**	**2.6**	mg/Kg
Benzo(a)anthracene	**0.67**	**0.92**	mg/Kg
Chrysene	**0.67**	**0.76**	mg/Kg
Benzo(b)fluoranthene	**0.67**	**1.1**	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	**0.67**	**0.82**	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		73	% Recovery
Phenol-d5		80	% Recovery
Nitrobenzene-d5		81	% Recovery
2-Fluorobiphenyl		82	% Recovery
2,4,6-Tribromophenol		81	% Recovery
Terphenyl-d14		87	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

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Sample Log 19312
December 02, 1998

PNAs by 8270C

Sample Name : **E21143 (PL2-2)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 12/02/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-09

Parameter	MRL	Measured Conc.	Units
Naphthalene	**0.67**	**2.2**	mg/Kg
2-Methylnaphthalene	**0.67**	**0.81**	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	**0.67**	**0.86**	mg/Kg
Fluorene	**0.67**	**1.3**	mg/Kg
Phenanthrene	**0.67**	**3.6**	mg/Kg
Anthracene	**0.67**	**0.91**	mg/Kg
Fluoranthene	**0.67**	**1.2**	mg/Kg
Pyrene	**0.67**	**1.1**	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		72	% Recovery
Phenol-d5		76	% Recovery
Nitrobenzene-d5		80	% Recovery
2-Fluorobiphenyl		83	% Recovery
2,4,6-Tribromophenol		81	% Recovery
Terphenyl-d14		81	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

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PNAs by 8270C

Sample Log 19312
December 02, 1998

Sample Name : **E21144 (PL2-3)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 12/02/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-10

Parameter	MRL	Measured Conc.	Units
Naphthalene	0.67	<0.67	mg/Kg
2-Methylnaphthalene	0.67	<0.67	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
Phenanthrene	**0.67**	**1.2**	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Fluoranthene	**0.67**	**1.4**	mg/Kg
Pyrene	**0.67**	**1.2**	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	**0.67**	**0.70**	mg/Kg
Benzo(b)fluoranthene	**0.67**	**1.26**	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	**0.67**	**0.73**	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		79	% Recovery
Phenol-d5		86	% Recovery
Nitrobenzene-d5		92	% Recovery
2-Fluorobiphenyl		85	% Recovery
2,4,6-Tribromophenol		86	% Recovery
Terphenyl-d14		87	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

Davis

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PNAs by 8270C

Sample Log 19312
December 02, 1998

Sample Name : **E21145 (PL2-4)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 12/02/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-11

Parameter	MRL	Measured Conc.	Units
Naphthalene	0.67	<0.67	mg/Kg
2-Methylnaphthalene	0.67	<0.67	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
Phenanthrene	0.67	<0.67	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Fluoranthene	0.67	<0.67	mg/Kg
Pyrene	0.67	<0.67	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		84	% Recovery
Phenol-d5		98	% Recovery
Nitrobenzene-d5		86	% Recovery
2-Fluorobiphenyl		89	% Recovery
2,4,6-Tribromophenol		82	% Recovery
Terphenyl-d14		98	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

Davis

1046 Olive Drive, Suite 2, Davis CA 95616 ■ 530-757-0920 ■ Fax 753-6091

PNAs by 8270C

Sample Log 19312
December 02, 1998

Sample Name : **E21146 (PL2-5)**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : 11/21/98
Date Extracted : 11/30/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 12/02/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-12

Parameter	MRL	Measured Conc.	Units
Naphthalene	**0.67**	**1.2**	mg/Kg
2-Methylnaphthalene	0.67	<0.67	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
Phenanthrene	**0.67**	**1.8**	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Fluoranthene	**0.67**	**0.80**	mg/Kg
Pyrene	**0.67**	**1.5**	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		84	% Recovery
Phenol-d5		82	% Recovery
Nitrobenzene-d5		89	% Recovery
2-Fluorobiphenyl		86	% Recovery
2,4,6-Tribromophenol		80	% Recovery
Terphenyl-d14		108	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

Davis

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PNAs by 8270C

Sample Log 19312
December 01, 1998

Sample Name : **Method Blank**

Project Name : Earth Systems Consultants
Project Number :
Sample Date : / /
Date Extracted : 11/25/98
Extr. Method : EPA 3550
QC Batch : BS981105

Date Analyzed : 11/30/98
Date Received : 11/24/98
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 19312-13

Parameter	MRL	Measured Conc.	Units
Naphthalene	0.67	<0.67	mg/Kg
2-Methylnaphthalene	0.67	<0.67	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
Phenanthrene	0.67	<0.67	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Fluoranthene	0.67	<0.67	mg/Kg
Pyrene	0.67	<0.67	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenz(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		65	% Recovery
Phenol-d5		82	% Recovery
Nitrobenzene-d5		89	% Recovery
2-Fluorobiphenyl		88	% Recovery
2,4,6-Tribromophenol		79	% Recovery
Terphenyl-d14		81	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Entech Analytical Labs, Inc.

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Subcontract Chain of Custody

19312

Subcontract Lab: Acculabs - Davis		Date Sent: 11/23/98	Project Name: Earth Systems Consultants		Due Date: 12/02/98		
Sample ID and Source	Matrix	Required Analysis	Date Taken	Time Taken	Containers	Pres?	
E21135 (PL1-1)	Soil	PNAS by 8270	11/21/98		4 ozjar		01
E21136 (PL1-2)							02
E21137 (PL1-3)							03
E21138 (PL1-4)							04
E21139 (PL1-5)							05
E21140 (PL1-6)							06
E21141 (PL1-7)							07
E21142 (PL2-1)							08
E21143 (PL2-2)							09
E21144 (PL2-3)							10
E21145 (PL2-4)							11
E21146 (PL2-5)	↓	↓	↓		↓		12

Relinquished By:	Received By:	Date:	Time:
VMoro via	Cal Overnight	11/23/98	6 pm
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:
	Stu Woodall	11/24/98	900

Notes: _____

Entech Analytical Labs, Inc.

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Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: ICP

QC Batch #: SM981115
Matrix: Solid
Units: mg/kg

Date Analyzed: 11/18/98
Extraction Method: EPA 3050
Spiked Sample: Blank Spike

PARAMETER	Method #	MB mg/kg	SA mg/kg	SR mg/kg	SP mg/kg	**SP %R**	SPD mg/Kg	**SPD %R**	RPD	QC LIMITS RPD	QC LIMITS %R
Antimony	6010	<0.50	50.	na	na	na	na	na	na	25.0	71-103
Arsenic	6010	<0.50	50.	na	na	na	na	na	na	25.0	60-115
Barium	6010	<0.50	50.	na	na	na	na	na	na	25.0	76-106
Beryllium	6010	<0.50	50.	na	na	na	na	na	na	25.0	78-101
Cadmium	6010	<0.50	50.	0.0	48.	**97**	49.	**98**	1.4	25.0	74-100
Chromium	6010	<0.50	50.	0.0	43.	**85**	44.	**87**	2.2	25.0	69-104
Cobalt	6010	<0.50	50.	na	na	na	na	na	na	25.0	77-99
Copper	6010	<0.50	50.	na	na	na	na	na	na	25.0	65-116
Lead	6010	<0.50	50.	0.0	45.	**91**	45.	**89**	1.3	25.0	63-114
Molybdenum	6010	<0.50	50.	na	na	na	na	na	na	25.0	59-113
Nickel	6010	<0.50	50.	0.0	53.	**106**	52.	**105**	0.9	25.0	70-119
Selenium	6010	<0.50	50.	na	na	na	na	na	na	25.0	58-120
Silver	6010	<0.50	50.	na	na	na	na	na	na	25.0	71-106
Thallium	6010	<0.50	50.	na	na	na	na	na	na	25.0	54-113
Vanadium	6010	<0.50	50.	na	na	na	na	na	na	25.0	66-124
Zinc	6010	<0.50	50.	0.0	49.	**99**	50.	**99**	0.7	25.0	69-110

Note: LCS and LCSD results reported for the following Parameters:
All

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

- na: Not Analyzed in QC batch
- MB: Method Blank
- SA: Spike Added
- SR: Sample Result
- SP: Spike Result
- SP (%R): Spike % Recovery
- SPD: Spike Duplicate Result
- SPD (%R): Spike Duplicate % Recovery

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QUALITY CONTROL RESULTS SUMMARY

METHOD: ICP

QC Batch #: SM981118
Matrix: Solid
Units: mg/kg

Date Analyzed: 11/30/98
Extraction Method: EPA 3050
Spiked Sample: Blank Spike

PARAMETER	Method #	MB mg/kg	SA mg/kg	SR mg/kg	SP mg/kg	**SP %R**	SPD mg/Kg	**SPD %R**	RPD	QC LIMITS RPD	QC LIMITS %R
Antimony	6010	<0.50	50.	na	na	na	na	na	na	25.0	71-103
Arsenic	6010	<0.50	50.	0.0	49.	**98**	59.	**117**	17.9	25.0	60-115
Barium	6010	<0.50	50.	na	na	na	na	na	na	25.0	76-106
Beryllium	6010	<0.50	50.	na	na	na	na	na	na	25.0	78-101
Cadmium	6010	<0.50	50.	na	na	na	na	na	na	25.0	74-100
Chromium	6010	<0.50	50.	na	na	na	na	na	na	25.0	69-104
Cobalt	6010	<0.50	50.	na	na	na	na	na	na	25.0	77-99
Copper	6010	<0.50	50.	na	na	na	na	na	na	25.0	65-116
Lead	6010	<0.50	50.	0.0	42.	**84**	40.	**80**	4.4	25.0	63-114
Molybdenum	6010	<0.50	50.	na	na	na	na	na	na	25.0	59-113
Nickel	6010	<0.50	50.	na	na	na	na	na	na	25.0	70-119
Selenium	6010	<0.50	50.	na	na	na	na	na	na	25.0	58-120
Silver	6010	<0.50	50.	na	na	na	na	na	na	25.0	71-106
Thallium	6010	<0.50	50.	na	na	na	na	na	na	25.0	54-113
Vanadium	6010	<0.50	50.	na	na	na	na	na	na	25.0	66-124
Zinc	6010	<0.50	50.	na	na	na	na	na	na	25.0	69-110

Note: LCS and LCSD results reported for the following Parameters:
All

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

na: Not Analyzed in QC batch
MB: Method Blank
SA: Spike Added
SR: Sample Result
SP: Spike Result
SP (%R): Spike % Recovery
SPD: Spike Duplicate Result
SPD (%R): Spike Duplicate % Recovery

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QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography

QC Batch #: GBG2981125
Matrix: Soil
Units: µg/kg

Date Analyzed: 11/25/98
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB µg/kg	SA µg/kg	SR µg/kg	SP µg/kg	SP % R	SPD µg/kg	SPD %R	RPD	QC LIMITS RPD	QC LIMITS %R
Benzene	8020	<5.0	80	ND	78	97	79	99	2.0	25	79-116
Toluene	8020	<5.0	80	ND	76	95	80	100	5.4	25	65-128
Ethyl Benzene	8020	<5.0	80	ND	74	92	80	100	8.2	25	82-115
Xylenes	8020	<5.0	240	ND	233	97	243	101	4.2	25	86-113
Gasoline	8015	<1000.00	1000	ND	1060	106	1070	107	0.9	25	73-114

Note: LCS and LCSD results reported for the following Parameters:
All

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

na: Not Analyzed in QC batch
MB: Method Blank
SA: Spike Added
SR: Sample Result
RPD(%): Duplicate Analysis - Relative Percent Difference
SP: Spike Result
SP (%R): Spike % Recovery
SPD: Spike Duplicate Result
SPD (%R): Spike % Recovery
NC: Not Calculated

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QUALITY CONTROL RESULTS SUMMARY

METHOD: Gas Chromatography

QC Batch #: GBG2981201
Matrix: Soil
Units: µg/kg

Date Analyzed: 12/01/98
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB µg/kg	SA µg/kg	SR µg/kg	SP µg/kg	**SP % R**	SPD µg/kg	**SPD %R**	RPD	QC LIMITS RPD	QC LIMITS %R
Benzene	8020	<5.0	80	ND	76	**95**	78	**97**	2.5	25	79-116
Toluene	8020	<5.0	80	ND	77	**96**	77	**96**	0.2	25	65-128
Ethyl Benzene	8020	<5.0	80	ND	77	**96**	76	**95**	1.1	25	82-115
Xylenes	8020	<5.0	240	ND	235	**98**	228	**95**	2.9	25	86-113
Gasoline	8015	<1000.00	1000	ND	910	**91**	950	**95**	4.3	25	73-114

Note: LCS and LCSD results reported for the following Parameters:
All

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

na: Not Analyzed in QC batch
MB: Method Blank
SA: Spike Added
SR: Sample Result
RPD(%): Duplicate Analysis - Relative Percent Difference
SP: Spike Result
SP (%R): Spike % Recovery
SPD: Spike Duplicate Result
SPD (%R): Spike % Recovery
NC: Not Calculated

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QUALITY CONTROL RESULTS SUMMARY

QC Batch #: DS981110
Matrix: Soil
Units: mg/Kg

Date analyzed: 11/23/98
Date extracted: 11/23/98
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB mg/Kg	SA mg/Kg	SR mg/Kg	SP mg/Kg	**SP %R**	SPD mg/Kg	**SPD %R**	RPD	QC LIMITS RPD	QC LIMITS %R
Diesel	8015M	<1.0	25	ND	22	**89**	23	**90**	1.3	25	65-118

Note: LCS and LCSD results reported for the following Parameter:
All

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

MB: Method Blank
na: Not Analyzed in QC batch
SA: Spike Added
SR: Sample Result
RPD(%): Duplicate Analysis - Relative Percent Difference
SP: Spike Result
SP (%R): Spike % Recovery
SPD: Spike Duplicate Result
SPD (%R): Spike Duplicate % Recovery
NC: Not Calculated

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QUALITY CONTROL RESULTS SUMMARY

QC Batch #: DS981111
Matrix: Soil
Units: mg/Kg

Date analyzed: 11/25/98
Date extracted: 11/25/98
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB mg/Kg	SA mg/Kg	SR mg/Kg	SP mg/Kg	**SP %R**	SPD mg/Kg	**SPD %R**	RPD	QC LIMITS RPD	QC LIMITS %R
Diesel	8015M	<1.0	25	ND	22	**87**	23	**91**	4.9	25	65-118

Note: LCS and LCSD results reported for the following Parameter:
All

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

MB: Method Blank
na: Not Analyzed in QC batch
SA: Spike Added
SR: Sample Result
RPD(%): Duplicate Analysis - Relative Percent Difference
SP: Spike Result
SP (%R): Spike % Recovery
SPD: Spike Duplicate Result
SPD (%R): Spike Duplicate % Recovery
NC: Not Calculated

Entech Analytical Labs, Inc.

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QUALITY CONTROL RESULTS SUMMARY

QC Batch #: DS981112
Matrix: Soil
Units: mg/Kg

Date analyzed: 11/26/98
Date extracted: 11/29/98
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB mg/Kg	SA mg/Kg	SR mg/Kg	SP mg/Kg	**SP %R**	SPD mg/Kg	**SPD %R**	RPD	QC LIMITS RPD	QC LIMITS %R
Diesel	8015M	<1.0	25	ND	24	**96**	24	**97**	1.7	25	65-118

Note: LCS and LCSD results reported for the following Parameter:
All

Acceptable LCS and LCSD results are reported when matrix interferences cause MS and MSD results to fall outside established QC limits.

Definition of Terms:

MB: Method Blank
na: Not Analyzed in QC batch
SA: Spike Added
SR: Sample Result
RPD(%): Duplicate Analysis - Relative Percent Difference
SP: Spike Result
SP (%R): Spike % Recovery
SPD: Spike Duplicate Result
SPD (%R): Spike Duplicate % Recovery
NC: Not Calculated

CHAIN OF CUSTODY RECORD

Project No.	Project Name	P.O. #
NFE-4392-01	Mariner Square	
		Lab: Entech
Sampler (Signature): [signature]		Turn Around Time: 5d

Test Requested: TPHg BTEX MTBE | TPHd | TPHmo | PNAs | TL Lead | |

No.	Date	Time	Sample Description		TPHg BTEX MTBE	TPHd	TPHmo	PNAs	TL Lead			Remarks
1	11/21/98	1448	PL1-1	E21135	X	X	X	X	X			Run all
2	↓	1453	PL1-2	E21136	X	↓	↓	X	X			
3		1458	PL1-3	E21137	X			X	X			Soil
4		1503	PL1-4	E21138	↓			X	X			
5		1509	PL1-5	E21139				X	X			
6		1528	PL1-6	E21140				X	X			
7		1539	PL1-7	E21141				X	X			
8		1535	PL2-1	E21142				X	X			
9		1616	PL2-2	E21143				X	X			
10		1625	PL2-3	E21144				X	X			
11		1630	PL2-4	E21145				X	X			
12	↓	1636	PL2-5	E21146				X	X			

Relinquished By:	Date:	Time:	Received By:	Relinquished By:	Date:	Time:	Received by:
[signature]	11/23/98	4:41p	F. Jimenez				
F Jimenez	11/23/98	5:20pm	[signature]				

Remarks:

Report To. Gary Pischke

Earth Systems Consultants
Northern California

47853 Warm Springs Blvd.
Fremont, CA. 94539-7400
Phone (510) 353-0320
Fax (510) 353-0344